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PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/576,420	Applicant(s) YAMAZAKI ET AL.	
	Examiner TONY TRAN	Art Unit 2894	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 03 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 07/08/08.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1 and 19-37 is/are pending in the application.
- 4a) Of the above claim(s) 25 and 35 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1, 19-24, 26-34, 36 and 37 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

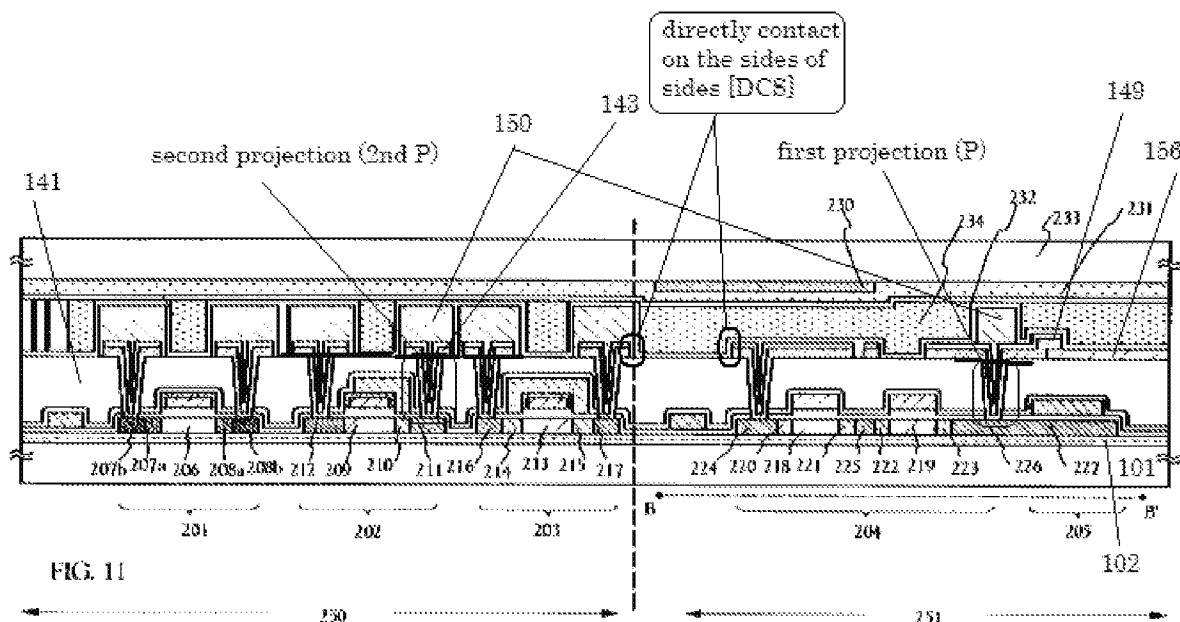
DETAILED ACTION

Claim Rejections - 35 USC § 103

1. 35 U.S.C. 103 Conditions for patentability; non-obvious subject matter.

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 1, 19-24 and 36 are rejected under 35 U.S.C. 103(a) as being unpatentable over Arao et al., embodiment 1, FIGS. 1-7 and 11 (Patent No.: US 6639265 B2) (hereinafter Arao) in view of Arao, embodiment 9, FIGS. 8A-B, 9 and further in view of Kobayashi et al (Pub. No.: US 2002/0006558 A1) (hereinafter Kobayashi).



Regarding **Claim 1**, Arao, embodiment 1, FIGS. 1-7 and 11 discloses a liquid crystal display device comprising:

a substrate (101, FIG. 1A, col. 6, lines 55-65, note that the substrate 101 is a transparent material);

a base film (102, col. 6, lines 60-67) formed over the substrate (101);

a thin film transistor (204, col. 12, lines 22-35) formed over the base film (102);

a projection (149/[P], FIG. 11, [as shown below]) comprising a conductive material (source and drain wiring, col. 11, lines 53-67) formed over at least one of a drain electrode and a source electrode (224 to 226, col. 12, lines 50-55) of the thin film transistor (204);

an film ([141+150+151], FIG. 11 [as shown above], col. 11, lines 43-50) formed over the thin film transistor (204); and

a pixel electrode (156, FIG. 5A, col. 12, line 9) connected to the projection [P],

wherein the projection [P] has a stacked structure (FIG. 11) including a plurality of conductors (FIG. 11) and wherein each of the plurality of conductors is in direct contact ([DCS], FIG. 11, [as shown above]) with the film [141+150+151].

However, Arao, embodiment 1, FIGS. 1-7 and 11 does not disclose the material of the spacers 150 and the protective layer 151.

Nevertheless, Arao, embodiment 9, FIGS. 8A-B, 9 does teach material of the spacers (1405a-e & 1406 are the NN700, col. 30, lines 35-45, note that as discloses in Yamazaki et al. [Pub. No.: US 2007/0146568 A1, paragraph [0156]], NN700 is a dielectric material) and the protective layer (1407 is a polyimide resin material, col. 31, lines 8-15).

Therefore, since both Arao, embodiment 1, FIGS. 1-7 and 11 and Arao, embodiment 9, FIGS. 8A-B, 9 teach on the same endeavor. It would have been obvious to one ordinary skill in the art at the time the invention was made to further including a disclose of dielectric material of the spacers 150 and the protective layer 151 in Arao, embodiment 1,

FIGS. 1-7 and 11, as taught by Arao, embodiment 9, FIGS. 8A-B, 9. One would have been motivate to make such a change to clarify the Arao invention.

Furthermore, after the combining of Arao, embodiment 1, FIGS. 1-7 and 11 and Arao, embodiment 9, FIGS. 8A-B, 9 would teach an insulating film ([141+150+151], FIG. 11 [as shown above], col. 11, lines 43-50) formed over the thin film transistor (204); and

wherein the projection [P] has a stacked structure (FIG. 11) including a plurality of conductors and wherein each of the plurality of conductors is in direct contact with the insulating film [141+150+151].

Moreover, Arao, embodiment 1, FIGS. 1-7 and 11 does not disclose a base film comprising a photo-catalyst formed over the substrate;

Nevertheless, Kobayashi does teach a base film (233a-d, FIG. 16, [0274]) comprising a photo-catalyst formed over the substrate (the transparent substrate 232).

Therefore, since both of Arao, embodiment 1, FIGS. 1-7 and 11 and Kobayashi teach on the liquid crystal display devices. It would have been obvious to one ordinary skill in the art at the time the invention was made to further including a base film comprising a photo-catalyst formed over the substrate in Arao, embodiment 1, FIGS. 1-7 and 11, as taught by Kobayashi. One would have been motivate to make such a change to improve the visibility of the LCD (a viewer sees a different color on retina, Kobayashi, [0015]).

In regards to **Claim 19**, Arao, embodiment 1, FIGS. 1-7 and 11 differs from the claim invention by not showing wherein the projection has a tapered shape. It has been held that where the only difference between the prior art and the claims was a recitation of relative dimensions or shape of the claimed device, and a device having the claimed relative dimensions or shape would not perform differently than the prior art device, the claimed

device was not patentably distinct from the prior art device (MPEP §2144.04). Therefore, it would have been obvious that a mere change in shape of a component is generally recognized as being within the level of ordinary skill in the art.

Regarding **Claim 20**, Kobayashi further teaches the liquid crystal display device according to claim 1, wherein a part of a surface of the base film (233a-d) has a hydrophilic property (hydrophilify the oils stains, [0281] & [0221]).

Regarding **Claim 21**, Kobayashi further teaches the liquid crystal display device according to claim 1, wherein the base film (233a-d) contains one selected from the group consisting of titanium oxide, strontium titanate, cadmium selenide, potassium tantalate, cadmium sulfide, zirconium oxide, niobium oxide, zinc oxide, iron oxide, tungsten oxide [0284].

Regarding **Claim 22**, Kobayashi further teaches wherein the base film is doped with a transition metal (doping with metal ions of chromium., [0208]).

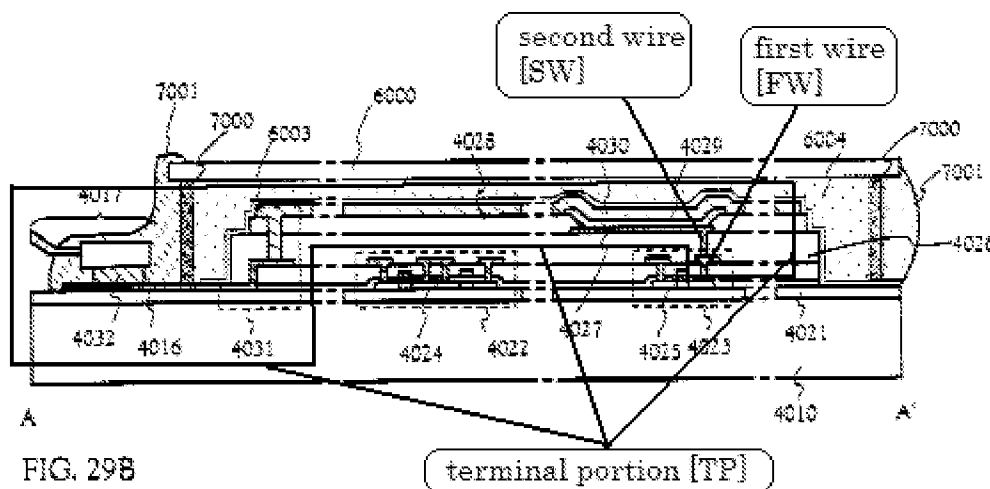
Regarding **Claim 23**, Arao, embodiment 1, FIGS. 1-7 and 11 further discloses the liquid crystal display device according to claim 1, wherein at least one of a gate electrode (114) of the thin film transistor (204) contains one selected from the group consisting of tungsten (col. 4, lines 25-34).

Regarding **Claim 24**, Arao, embodiment 1, FIGS. 1-7 and 11 further discloses the liquid crystal display device according to claim 1, wherein at least one of the drain electrode, the source electrode (224, 226), and the projection [P] contains one selected from the group consisting of aluminum (col. 11, lines 53-65).

In regards to **Claim 36**, Arao, embodiment 1, FIGS. 1-7 and 11 differs from the invention by not showing wherein the plurality of conductors are formed from the same

material. It would have been obvious to one having ordinary skill in the art at the time of the invention was made to further including wherein the plurality of conductors are formed from the same material since it has been held to be within the general skill of a worker in the art to select a known material on the basis of its suitability for the intended use as a matter of obvious design choice. In re Leshin, 125 USPQ 416.

3. **Claims 26-34 and 37** are rejected under 35 U.S.C. 103(a) as being unpatentable over Arao et al., embodiment 1, FIGS. 1-7 and 11 (Patent No.: US 6639265 B2) (hereinafter Arao) in view of Arao, embodiment 9, FIGS. 8A-B, 9 and Arao, embodiment 11, FIGS. 29A-29B and further in view of Kobayashi et al (Pub. No.: US 2002/0006558 A1) (hereinafter Kobayashi).



Regarding **Claim 26**, Arao, embodiment 1, FIGS. 1-7 and 11 further discloses a liquid crystal display device comprising:

a pixel portion (251) comprising:

a base film (102) formed over a substrate (101);

a thin film transistor (204) formed over the base film (102);

a first projection (149/[P]) comprising a conductive material (col. 11, lines 53-62) formed over at least one of a drain electrode and a source electrode (224 to 226) of the thin film transistor (204);

a first film (141+150+151) formed over the thin film transistor (204); and

a pixel electrode (156) connected to the projection [P];

wherein each of the first projection [P] has a stack structure (two layers stacked), said first projection including a plurality of first conductors (two layers stacked); and

wherein each of the plurality of first conductors is in direct contact with the first film (141+150+151).

However, Arao, embodiment 1, FIGS. 1-7 and 11 does not disclose the material of the spacers 150 and the protective layer 151.

Nevertheless, Arao, embodiment 9, FIGS. 8A-B, 9 does teach material of the spacers (1405a-e & 1406 are the NN700, col. 30, lines 35-45, note that as discloses in Yamazaki et al. [Pub. No.: US 2007/0146568 A1, paragraph [0156]], NN700 is a dielectric material) and the protective layer (1407 is a polyimide resin material, col. 31, lines 8-15).

Therefore, since both Arao, embodiment 1, FIGS. 1-7 and 11 and Arao, embodiment 9, FIGS. 8A-B, 9 teach on the same endeavor. It would have been obvious to one ordinary skill in the art at the time the invention was made to further including a disclose of dielectric material of the spacers 150 and the protective layer 151 in Arao, embodiment 1, FIGS. 1-7 and 11, as taught by Arao, embodiment 9, FIGS. 8A-B, 9. One would have been motivate to make such a change to clarify the Arao invention.

Furthermore, after the combining of Arao, embodiment 1, FIGS. 1-7 and 11 and Arao, embodiment 9, FIGS. 8A-B, 9 would teach an insulating film ([141+150+151], FIG. 11 [as shown above], col. 11, lines 43-50) formed over the thin film transistor (204); and

wherein the projection [P] has a stacked structure (two layers stacked), said first projection including a plurality of first conductors (two layers stacked); and wherein each of the plurality of conductors is in direct contact with the insulating film [141+150+151]

Moreover, Arao, embodiment 1, FIGS. 1-7 and 11 does not disclose a terminal portion comprising: the base film formed over the substrate; a first wiring formed over the base film; a second insulating film formed over the first wiring; a second wiring formed over the second insulating film; a second projection comprising a conductive material formed over the second wiring; a third insulating film formed over the second wiring; and a terminal electrode connected to the second projection, wherein each of the first projection and the second projection has a stacked structure.

Nevertheless, Arao, embodiment 11, FIGS. 29A-29B does teach a terminal portion comprising:

the base film (4021, col. 34, lines 25-30) formed over the substrate (4010);
a first wiring ([FW], FIG. 29B [as shown above]) formed over the base film (4021);
a second insulating film (4026, col. 34, lines 30-35) formed over the first wiring [FW];
a second wiring [SW] formed over the second insulating film (4026);
a second projection (4029+4030, col. 34, lines 63-67) comprising a conductive material (cathode 4030) formed over the second wiring [SW];
a third insulating film (4028, col. 34, lines 35-40) formed over the second wiring [SW]; and

a terminal electrode (4017, col. 35, lines 10-15) connected (thru 4016) to the second projection (4029+4030), wherein each of the second projection has a stacked structure (4029 & 4030); said second projection including a plurality of second conductors; and

wherein each of the plurality of second conductors (4029 & 4030) is in direct contact with the insulating film (4028, col. 34, lines 35-40).

Therefore, since both of Arao, embodiment 1, FIGS. 1-7 and 11 and Arao, embodiment 11, FIGS. 29A-29B teach on the liquid crystal display devices. It would have been obvious to one ordinary skill in the art at the time the invention was made to further including a terminal portion comprising: the base film formed over the substrate; a first wiring formed over the base film; a second insulating film formed over the first wiring; a second wiring formed over the second insulating film; a second projection comprising a conductive material formed over the second wiring; a third insulating film formed over the second wiring; and a terminal electrode connected to the second projection, wherein each of the second projection has a stacked structure in Arao, embodiment 1, FIGS. 1-7 and 11, as taught by Arao, embodiment 11, FIGS. 29A-29B. One would have been motivate to make such a change to improve the visibility of the LCD.

Furthermore, after combining the three Arao, embodiment 1, FIGS. 1-7 and 11, Arao, embodiment 9, FIGS. 8A-B, 9 and Arao, embodiment 11, FIGS. 29A-29B would teach said first projection including a plurality of first conductors and said second projection including a plurality of second conductors; and

wherein each of the plurality of first conductors is in direct contact with the first insulating film and each of the plurality of second conductors is in direct contact with the third insulating film.

Additionally, Arao, embodiment 1, FIGS. 1-7 and 11 and Arao, embodiment 11, FIGS. 29A-29B do not disclose a base film comprising a photo-catalyst formed over the substrate;

Nevertheless, Kobayashi does teach a base film (233a-d, FIG. 16, [0274]) comprising a photo-catalyst formed over the substrate (the transparent substrate 232).

Therefore, since all four Arao, embodiment 1, FIGS. 1-7 and 11, Arao, embodiment 9, FIGS. 8A-B, 9, Arao, embodiment 11, FIGS. 29A-29B and Kobayashi teach on the liquid crystal display devices. It would have been obvious to one ordinary skill in the art at the time the invention was made to further including a base film comprising a photo-catalyst formed over the substrate in Arao, embodiment 1, FIGS. 1-7 and 11, Arao, embodiment 9, FIGS. 8A-B, 9 and Arao, embodiment 11, FIGS. 29A-29B, as taught by Kobayashi. One would have been motivate to make such a change to improve the visibility of the LCD (a viewer sees a different color on retina, Kobayashi, [0015]).

In regards to **Claim 27**, Arao, embodiment 1, FIGS. 1-7 and 11, Arao, embodiment 11, FIGS. 29A-29B and Kobayashi differ from the claim invention by not showing wherein each of the first projection and the second projection has a tapered shape. It has been held that where the only difference between the prior art and the claims was a recitation of relative dimensions or shape of the claimed device, and a device having the claimed relative dimensions or shape would not perform differently than the prior art device, the claimed device was not patentably distinct from the prior art device (MPEP §2144.04). Therefore, it would have been obvious that a mere change in shape of a component is generally recognized as being within the level of ordinary skill in the art.

Regarding **Claim 28**, Kobayashi further teaches the liquid crystal display device according to claim 26, wherein a part of a surface of the base film (233a-d) has a hydrophilic property (hydrophilify the oils stains, [0281] & [0221]).

Regarding **Claim 29**, Kobayashi further teaches the liquid crystal display device according to claim 26, wherein the base film (233a-d) contains one selected from the group consisting of titanium oxide, strontium titanate, cadmium selenide, potassium tantalate, cadmium sulfide, zirconium oxide, niobium oxide, zinc oxide, iron oxide, tungsten oxide [0284].

Regarding **Claim 30**, Kobayashi further teaches wherein the base film is doped with a transition metal (doping with metal ions of chromium..., [0208]).

Regarding **Claim 31**, Arao, embodiment 1, FIGS. 1-7 and 11 further discloses the liquid crystal display device according to claim 26, wherein at least one of a gate electrode (114) of the thin film transistor (204) contains one selected from the group consisting of tungsten (col. 4, lines 25-34).

Regarding **Claim 32**, Arao, embodiment 1, FIGS. 1-7 and 11 further discloses the liquid crystal display device according to claim 1, wherein at least one of the drain electrode, the source electrode (224, 226), and the projection [P] contains one selected from the group consisting of aluminum (col. 11, lines 53-65).

Regarding **Claim 33**, Arao, embodiment 11, FIGS. 29A-29B further discloses the liquid crystal display device according to claim 26, wherein a conductor (4030) is formed over the first wiring ([FW], FIG. 29B [as shown above]), and wherein the conductor 4030) is connected to the first wiring [FW] and the second wiring [SW].

Regarding **Claim 34**, Arao, embodiment 11, FIGS. 29A-29B further discloses the liquid crystal display device according to claim 33, wherein the conductor contains one selected from the group consisting of aluminum (col. 35, lines 1-10).

In regards to **Claim 37**, Arao, embodiment 1, FIGS. 1-7 and 11 differs from the invention by not showing wherein the plurality of first conductors are formed from the same material. It would have been obvious to one having ordinary skill in the art at the time of the invention was made to further including wherein the plurality of first conductors are formed from the same material since it has been held to be within the general skill of a worker in the art to select a known material on the basis of its suitability for the intended use as a matter of obvious design choice. In re Leshin, 125 USPQ 416.

Response to Arguments

4. Applicant's arguments, filed 11/24/08 with respect to claims 1 and 26 have been fully considered but they are not persuasive.

With respect to Claim 1, Applicant argues that "Applicants contend that Arao et al. fails to disclose the structure of the present invention wherein a projection is provided that includes a stacked arrangement of a plurality of conductors where each of the conductors is in direct contact with an insulating film formed over a TFT, as recited in claims 1 and 26."

In response to Applicant's contention, it is respectfully submitted that Arao, embodiment 1, FIGS. 1-7 and 11 does teach a first film (141+150+151) formed over the thin film transistor (204); and

wherein each of the plurality of first conductors is in direct contact with the first film (141+150+151); and

Arao, embodiment 9, FIGS. 8A-B, 9 does teach material of the spacers (1405a-e & 1406 are the NN700, col. 30, lines 35-45, note that as discloses in Yamazaki et al. [Pub. No.: US 2007/0146568 A1, paragraph [0156]], NN700 is a dielectric material) and the protective layer (1407 is a polyimide resin material, col. 31, lines 8-15);

Therefore, after the combining of Arao, embodiment 1, FIGS. 1-7 and 11 and Arao, embodiment 9, FIGS. 8A-B, 9 would teach an insulating film ([141+150+151], FIG. 11 [as shown above], col. 11, lines 43-50) formed over the thin film transistor (204); and wherein the projection [P] has a stacked structure (FIG. 11) including a plurality of conductors and wherein each of the plurality of conductors is in direct contact with the insulating film [141+150+151].

Furthermore, with respect to claim 26, beside the argument as stated in claim 1, Arao, embodiment 11, FIGS. 29A-29B does teach wherein each of the second projection has a stacked structure (4029 & 4030); said second projection including a plurality of second conductors; and

wherein each of the plurality of second conductors (4029 & 4030) is in direct contact with the third insulating film (4028, col. 34, lines 35-40).

Therefore, the examiner considers the above references are still read on the claims. For the above reasons, it is believed that the rejections should be sustained.

CONCLUSION

5. “Applicants’ amendment necessitated the new ground(s) of rejection presented in this Office Action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.”

6. Any inquiry concerning this communication or earlier communications from the examiner should be directed to TONY TRAN whose telephone number is (571) 270-1749. The examiner can normally be reached on Monday through Friday: 7:30AM-5:00PM (E.S.T.).

If attempts to reach the examiner by telephone are unsuccessful, the examiner’s supervisor, Kimberly Nguyen can be reached on (571) 272-2402. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Tony Tran/
Examiner, Art Unit 2894